

June 1, 2008

1. Overview

The Sacramento Municipal Utility District's ("District") Photovoltaics Incentive Program maintains a local market for photovoltaic (PV) electricity by offering direct subsidies for customer-owned, customer-sited PV systems and developing new approaches for integrating photovoltaics into customers' energy management strategies and green action plans.

In 2007 SMUD's PV incentive program began implementing California Senate Bill 1, which requires California's municipally owned utilities to offer photovoltaic incentive programs comparable to the ones required of the IOUs by the California Solar Initiative. For SMUD, the key financial requirements of SB1 are as follows:

- Adopt, implement, and finance a 10-year program beginning January 1, 2007, and ending December 31, 2016.
- On or before January 1, 2008, offer an incentive of at least \$2.80 per watt based on installed capacity or a comparable rebate based on electricity produced. Both capacity and production rebates must decline no less than an average of 7% per year over ten years.
- Set 10-year installation and budget goals proportional to SMUD's share of statewide load, which amount to 125 MW and \$139.2 million respectively.

In response to SB1, SMUD undertook a year-long, cross-departmental planning initiative whose mission was to develop a roadmap for SMUD's 10-year solar incentive. The following long-term goals for SMUD's solar program resulted from this effort and have been approved by executive management:

- Meet all legal requirements of SB1 and make subsidies available for 125 MW of new installation by the end of 2016.
- Achieve the above goal with as low an impact on ratepayers as possible by improving the efficiency and effectiveness of subsidies.
- Maintain a level of local market activity equal to that of the rest of the state throughout the course of the program.
- Achieve high customer satisfaction among participants, ratepayers, contractors, and other stakeholders.
- Foster local economic development while establishing a stable, competent local PV industry.
- Make the program available to all customer classes.
- Include solar impact in SMUD's long-term resource plan.
- By 2017, create a robust and sustainable local PV market that does not require substantial utility subsidization to thrive.
- Engage local governments and other civic organizations as program partners.

To attain these goals, the District will offer a core rebate program for customer-owned, customer-sited systems as well as a number of new business initiatives designed to serve specific markets more effectively, broaden the overall market for solar energy, and reduce the subsidy levels needed to support sales goals.

The core program will include three components: residential retrofit, commercial new and retrofit, and residential new construction ("Solar Smart Homes").

June 1, 2008

SMUD's incentive structure will match CSI in the following ways:

- A given rebate level (\$/W) will apply until a set number of megawatts have been installed, then the rebate level will drop to the next step; the length of time it takes to get through a step will depend on the market and will probably not conform to SMUD'S annual budget cycle.
- The incentives will drop by the same percentage in each step as the CSI incentives.

SMUD's incentive structure will differ from the CSI in the following ways:

- A proportionally larger number of megawatts will be placed in the earlier, richer rebate levels.
- The customer can choose one of the following three options regardless of the size of the system or whether it is serving a residential or commercial account:
 - An up-front buydown based on the expected performance as determined by its rated capacity, orientation, and shading. This option is known as the expected performance-based incentive, or *EPBI*.
 - A stream of payments for energy produced by the system over a span of five or ten years. The incentive will be a flat cents-per-kWh payment for all output from the system. The net present value of the sum of these payments will equal the current EPBI level adjusted by a 7.5% annual discount rate and 0.05%/year system output degradation. This option is known as the performance-based incentive, or *PBI*.
- The PBI will be the sole option for systems installed under 3rd-party PPAs and lease options.
- Government/nonprofit agencies will not receive higher rebates than tax-paying customers.

The 10-year incentive schedule and installation goals are shown below.

	Step 1 (2007)	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	TOTAL
Total Budget	\$16.10	\$23.10	\$22.80	\$21.00	\$18.30	\$16.40	\$11.50	\$8.10	\$6.60	\$6.20	\$150.10
Admin	\$1.40	\$1.80	\$1.90	\$1.90	\$2.00	\$2.00	\$2.10	\$2.10	\$2.20	\$2.30	\$19.70
Incentives	\$14.70	\$21.30	\$20.90	\$19.10	\$16.30	\$14.40	\$9.40	\$6.00	\$4.40	\$3.90	\$130.40
Commercial	\$0.80	\$12.50	\$13.20	\$12.40	\$11.60	\$10.50	\$6.50	\$4.20	\$2.90	\$2.30	\$76.90
Residential	\$13.90	\$8.80	\$7.70	\$6.70	\$4.70	\$3.90	\$2.90	\$1.80	\$1.50	\$1.60	\$53.50
Megawatts	4.9	8.5	9.5	10	10.5	13	14.5	17	17.5	19.6	125
Commercial	0.3	5	6	6.5	7.5	9.5	10	12	11.5	11.5	79.8
Residential	4.6	3.5	3.5	3.5	3	3.5	4.5	5	6	8.1	45.2
Res Retro	0.1	0.5	0.5	1	1	1	1.5	1.5	2	3.1	12.2
New Solar Homes	4.5	3	3	2.5	2	2.5	3	3.5	4	5	33

June 1, 2008

The objectives of the commercial and residential retrofit programs are as follows:

- Deploy incentives so as to stimulate market activity sufficient to achieve levels of market penetration at least equal to the statewide average
- Foster the prevalence of high-performing systems
- Support solar contractors with a predictable long-term schedule of incentives, provided with the least amount of contractor overhead without sacrificing SMUD's responsibility to protect the customer with installer and equipment eligibility requirements, design review, and system inspections
- Enable customers to critically assess the value proposition offered by customer-owned PV and to make investment and acquisition decisions with confidence based on understanding
- Make SMUD's rebate processes seamless with those used throughout the State unless there are good policy reasons for modifying those processes.

The objectives of the residential new construction program ("Solar Smart Homes") are as follows:

- Encourage the construction of large numbers of homes that exceed the energy performance requirements of the State energy codes by 20-35%, with 30-40% cooling savings.
- Accelerate the market penetration of new energy efficiency, solar and demand management products and technologies.
- Reduce the peak electricity demand of new homes to less than 1 kW by 2010.
- Reduce energy costs and improve comfort for homebuyers.
- Reduce greenhouse gas emissions and provide other environmental and local economic benefits.

For all programs, SMUD's quality control strategies will begin with some standard measures for ensuring performance and will focus on identifying critical performance issues through monitoring and evaluation. The program will then add more stringent quality-control measures if and when a pattern of underperformance appears. The program will also enlist the assistance of its customers and trade allies in fostering quality systems through continuous customer education and industry forums.

The typical quality-control methods used by utility programs, and the approaches planned for SMUD's program, are summarized in the table on the following page.

June 1, 2008

Type of Strategy	SMUD's Approaches
Equipment and installation standards	Equipment must conform to CEC equipment standards.
Warranty requirements	All equipment must carry a 10-year installation warranty backed by the installing contractor, covering all possible defects in workmanship and protecting against degradation of electrical output of more than 15% during a 10-year period.
Installer requirements, assessments, and voluntary training	<p>To be eligible for rebates, contractors must have an active A, B, C-10, or C-46 license. Contractors will be encouraged but not required to hold certification from the North American Board of Certified Energy Practitioners (NABCEP). Customers will be informed of which contractors are NABCEP-certified and of the importance of selecting NABCEP-qualified installers. IN addition, NABCEP-qualified installers will be paid an additional \$200 per install with verification that NABCEP-certified personnel oversaw or passed on the quality of the installation.</p> <p>To be listed by the program, contractors must supply basic business information covered in the contractor handbook, including proof of current contractor license.</p> <p>Contractors who install more than two systems that fail field inspections will be ineligible to receive rebates for 12 months from the date of the latest failed inspection. Causes of failed inspections will include noncompliance with the design specified in the contractor's incentive reservation or installation defects that cause more than 10% degradation in expected performance as calculated by the EPBB.</p>
Design standards and administrative design review	For EPBB, designs will be reviewed and incentives based on expected output relative to optimal output. For PBI, customer will be informed of estimated rebate payments based on system's expected annual production.
Incentive-based approaches <ul style="list-style-type: none"> • Performance based incentives • Expected performance-based buydown • Incentive hold-backs • Improved rating conventions 	EPBB and PBI will be options for all system sizes and customer classes.
Post-installation site inspection	All commercial-scale systems will receive a post-installation inspection to ensure conformance with design specifications and sound workmanship. Residential systems will receive random field inspections covering at least two installations by each contractor. Over time, fewer inspections will be performed on systems installed by contractors with a history of quality work.
Performance monitoring and assessment	Performance of all systems will be monitored, causes of substandard performance investigated and logged, customers notified of performance problems, and an annual performance index and status report produced and posted on the internet.
Maintenance requirements and services	Customers will be educated on maintenance practices recommended for maximum system performance. Installers whose systems fail or perform significantly worse than expected will be ineligible for further rebates until the system is fixed.

June 1, 2008

Applications received

	Comm. Retro/New	Res SF Retro	Res SF New	Res MF Market rate NEW	Res MF Low Income NEW
EPBI Approved	19	121	4140	1 app / 13 units	
EPBI Under review	0	0	0	1 app / 30 units	3 apps/285 units
PBI Approved	11	0	0	0	0
Reserved Funds (incl. installed.)	\$ 42.6 M	\$ 996,509	\$ 19.08 M	\$ 131,574	\$ 246,000
Capacity Reserved kW (incl. installed)	14,000	434	7,800	43.86	82.00
EPBI Dropped out	5	4	0	0	0
PBI Dropped out	1	0	0	0	0
Reasons	financial	financial	NA	NA	NA

Systems Installed

	2007 No. of projects	2008 No. of projects	total 15 mo. # of proj.	kW	kWh
Market-rate housing NEW	138	81	219	394	630,893
Residential Retrofit	60	17	77	243	388,320
Affordable housing	0	0	0	0	-
Multifamily	0	13	13	13.858	22,173
Mixed Use	0	0	0	0	-
Commercial	2	0	2	174	278,400
Nonprofit	1	0	1	11	17,600
Government	1	0	1	16	25,600
Industrial	1	0	1	97	155,200
Agricultural	0	0	0	0	-

kW Installed	Total
kW installed	949
kWh generated	1,518,186

June 1, 2008

Collections

2008	solar surcharge
Collections	\$ 1,987,471

Expenses - Incentives and Administration

2008	Comm. Retro/New	Res SF Retro	Res SF New	Res MF Retro
Incentives	\$ 0	\$ 139,804	\$ 49,233	\$ 41,574
Admin expenses	\$ 117,451	\$ 147,953	\$ 47,767	\$ 0
2007	Comm. Retro/New	Res SF Retro	Res SF New	Res MF Retro
Incentives	\$ 934,560	\$ 466,919	\$ 781,578	\$ 0-
Admin expenses	\$ 257,255	\$ 857,011	unable to track	unable to track

Total 15 months	Comm. Retro/New	Res SF Retro	Res SF New	Res MF Retro
Incentives	\$ 934,560	\$ 606,723	\$ 830,811	\$ 41,574
Admin expenses	\$ 374,706	\$ 1,004,964	\$ 7,767	\$ 0-
Breakdown of Total Admin. Jan. 07-Mar. 08	Comm. Retro/New	Res SF Retro	Res SF New 2008	Res MF Retro
labor	\$ 347,361	\$ 854,422	\$ 46,202	\$ 0
outside/consulting services	\$ 5,724	\$ 620	\$ 128	\$ 0
training/travel	\$ 742	\$ 6,337	\$ 0	\$ 0
Corporate expense	\$ 11,241	\$ 27,720	\$ 1,437	\$ 0
Software	\$ 9,638	\$ 115,864	\$ 0	\$ 0